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Modeling of internal combustion engines by adaptive network-based fuzzy inference system

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Abstract

© 2018, Institute of Advanced Scientific Research, Inc. All rights reserved. The using of an adaptive network-based fuzzy inference system (ANFIS) for the automatic formation of fuzzy rules governing the operation of internal combustion engines during testing is considered. The topology of the hybrid neural network is determined. An estimation of the adequacy of control based on the fuzzy rules obtained by the hybrid network was carried out. In the article, the input parameters of the ICE are determined, which are necessary for the implementation of the control action. The structure of the neural network and the rules for controlling the engine based on fuzzy logic are determined. Scientific novelty of the article is to develop a technique for determining the control parameters of internal combustion engines based on specified input parameters using a fuzzy system tuned with a neural network. Based on the conducted studies, the accuracy of the ICE simulation based on neural networks and the fuzzy system.

Keywords

Automated engine testing system, Fuzzy neural network, Internal combustion engine

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